REMARKS

Claims 10-25 were previously pending in the application. By the Amendment, claim 26 has been added, and claims 10-25 remain unchanged. Reconsideration in view of the above amendments and the following remarks is respectfully requested.

Grounds of Rejection

The claims stand rejected under the cited prior art of record. Specifically, claims 10-12, 14, 17 and 20-22 were rejected under 35 U.S.C. §102(b) as being anticipated by Tilmanis (U.S. Patent No. 3,839,878). Additionally, claims 13 and 15 were rejected under 35 U.S.C. §103(a) as being unpatentable over Tilmanis, and claims 18 and 19 were rejected under 35 U.S.C. §103(a) as being unpatentable over Tilmanis in view of Davis et al. (U.S. Published Patent Application No. 2001/0054292). Still further, claims 13, 15, 16 and 23-25 were rejected under 35 U.S.C. §103(a) as being unpatentable over Tilmanis in view of Hansen (U.S. Patent No. 4,345,441).

Independent Claims

Independent claim 10 defines a refrigeration device including a thermally insulated housing that encloses an inner chamber and an evaporator arranged in the housing and separated from the inner chamber. The evaporator includes a surface where an ice layer forms during operation. A pair of temperature sensors are placed *in the vicinity* of the evaporator such that for a given thickness of the ice layer, only one of the temperature sensors is embedded in the ice layer. A heating device is provided for heating the evaporator, and a monitoring circuit is connected to the pair of temperature sensors. The monitoring circuit determines the difference (ΔT) between the temperature values detected by the pair of temperature sensors and activates the heating device when the temperature difference exceeds a predetermined value (ΔT_{max}).

Independent claim 16 defines a refrigeration device including a thermally insulating housing enclosing an inner chamber and an evaporator arranged in the housing

and separated from the inner chamber. The evaporator includes a surface where an ice layer forms during operation. A pair of temperature sensors are placed in the vicinity of the evaporator such that for a given thickness of the ice layer only one of the temperature sensors is embedded in the ice layer. A carrier is attached to the evaporator surface, wherein a first one of the temperature sensors is arranged directly on the carrier adjacent the surface of the evaporator and the second one of the temperature sensors is arranged on the carrier at a distance from the first one of the temperature sensors and the surface. A heating device is provided for heating the evaporator, and a monitoring circuit determines the difference between the temperature values detected by the temperature sensors and activates the heating device when the temperature difference exceeds a predetermined value.

Independent claim 17 defines an operating method for a refrigeration device including the steps of (a) positioning the pair of temperature sensors in the vicinity of the evaporator; (b) detecting a difference between temperature values detected by the pair of temperature sensors; and (c) deciding that a defrosting procedure is necessary if the difference exceeds a limit value.

Independent claim 26 defines a refrigeration device including a thermally insulating housing including an inner chamber for receiving refrigerated goods and an evaporator chamber separated from the inner chamber by a partition. The partition includes openings defining a cooling channel between the evaporator chamber and the inner chamber. An evaporator is disposed in the evaporator chamber and includes a surface where an ice layer forms during operation. A first temperature sensor is attached directly to the surface of the evaporator, and a second temperature sensor is disposed in one of the openings in the partition between the evaporator chamber and the inner chamber such that the second temperature sensor is not disposed in either the evaporator chamber or the inner chamber. A heating device is provided for heating the evaporator, and a monitoring circuit is connected to the first and second temperature sensors and communicates with the heating device, where the monitoring circuit is programmed to determine the difference (ΔT) between the temperature values detected by the first and

second temperature sensors and to activate the heating device when the temperature difference exceeds a predetermined value (ΔTmax).

Claims 19 Objection

With regard to the objection to claim 19, lines 1 and 2 of amended claim 19 read as "[t]he method according to claim 18, wherein said steps b) and c) are performed . . . ." Applicants note that the language is accurate and clear. Withdrawal of the objection is requested.

Rejections Over Prior Art

With regard to independent claim 10, as discussed previously, in contrast with Tilmanis, claim 10 recites that the pair of temperature sensors are placed in the vicinity of the evaporator. Tilmanis rather describes that one thermistor 36 is arranged in contact with the coil of the evaporator 18, while the other thermistor 38 is arranged within the frozen food storage chamber 12. See col. 4, lines 17-19. In this context, the Examiner contends that the phrase "in the vicinity" must "clearly" include the frozen food storage chamber. The Examiner reasons that since the evaporator is what is used to make the air in the frozen food chamber cold, it must necessarily be "in the vicinity" of the evaporator. Applicants respectfully disagree.

This argument is akin to saying that a tenth floor space in a commercial building is "in the vicinity" of the basement or first floor where an air conditioning unit resides since the air conditioning unit serves to cool the atmosphere on the tenth floor. To the contrary, in the context of the present invention, reference to the "vicinity" of the evaporator is defined by reference to the thickness of an ice layer. Claim 10, for example, recites that the pair of temperature sensors are placed in the vicinity of the evaporator *such that* for a given thickness of the ice layer only one of the temperature sensors is embedded in the ice layer. By this language, it is clear that the "vicinity" encompasses a distance only slightly greater than that of an ice layer formed on the evaporator. Claim 17 defines related subject matter. In Tilmanis, on the other hand, with

the thermistor 38 within the food storage chamber 12, the thermistor 38 is more susceptible to temperature variations within the chamber, which is dependent on many factors including, for example, ambient air temperature, ambient air humidity, the frequency with which the refrigerator door is opened, the nature of the goods stored in the chamber, etc. As also discussed previously, by placing the thermistor 38 within the food storage chamber 12, the thermistor 38 is more susceptible to damage, for example by the user placing goods or impacting the thermistor with goods in the chamber and/or inaccurate temperature readings for example by the user placing a frozen item in direct contact with the thermistor 38.

Applicants thus respectfully submit that claims 10 and 17 are distinguishable from Tilmanis and that the rejection is misplaced.

With regard to the dependent claims, Applicants submit that these claims are allowable at least by virtue of their dependency on an allowable independent claim and also because they recite additional patentable subject matter.

With regard to claims 13 and 15, the Examiner recognizes that Tilmanis lacks the second temperature sensor arranged on an output of the channel terminating in the inner chamber. The Examiner contends that for Tilmanis to include this subject matter, it would have been an obvious mechanical expedient. With reference to the Amendment filed May 27, 2009, Applicants submit that the proposed modification is not suggested in Tilmanis. Tilmanis specifically discloses that the second thermistor 38 is arranged within the frozen food storage chamber 12. The placement of the second thermistor is not arbitrary. Tilmanis describes as an object of the invention to periodically sense the temperature of the evaporator coil and the temperature of a storage space of the refrigerator. Tilmanis initiates the operation of the defrost apparatus when the difference between these two temperatures exceeds a predetermined value. The modification proposed in the Office Action thus directly contrasts an express objective of the Tilmanis patent. Additionally, changing a position of the thermistor 38 would require circuit modifications and programming modifications, which are neither disclosed nor suggested in Tilmanis. Applicants thus respectfully submit that the rejection is misplaced.

Moreover, Applicants submit that these dependent claims are allowable at least by virtue of their dependency on an allowable independent claim. Withdrawal of the rejection is requested.

With regard to claims 18 and 19, Applicants submit that these dependent claims are allowable at least by virtue of their dependency on an allowable independent claim and also because they recite additional patentable subject matter. The Davis publication does not correct the deficiencies noted above with regard to Tilmanis in the context of claim 17. Withdrawal of the rejection is thus requested.

With regard to the rejection of claims 13, 15, 16 and 23-25, notwithstanding paragraphs 12 and 13 of the Office Action, the Examiner contends that "Hansen explicitly teaches that placement of a second temperature sensor in the freezer compartment is known in the art, and that it is an improvement to not locate the second temperature sensor in the inner chamber, and Hansen discloses but does not require juxtaposition of the first and second temperature sensors," referring to col. 2, lines 13-14 and col. 1, lines 31-39. Applicants submit, however, that this contention is a mischaracterization of the Hansen patent. Nowhere does Hansen even remotely reference *not* locating a second temperature sensor in the inner chamber as an advantage. In fact, Hansen does not reference a location of the second temperature sensor at all.

Moreover, reference to the sensors being "closely juxtaposed" does not suggest that the sensors can be freely placed anywhere within the refrigerator. The term "juxtaposed" rather refers to the sensors being next to each other "in a space-saving construction." In the reference to col. 1 in Hansen, Hansen describes an evaluating circuit that compares the evaporator temperature and the temperature in the refrigerated space. Hansen actually describes a sensor holder 9 that includes a frost sensor 16 and a second sensor 17 that measures the evaporator temperature. In the context of claims 13 and 15, since the sensors 16, 17 in Hansen are contained within the sensor holder 9, it is readily apparent that Hansen lacks the claimed sensor being arranged on an output of a channel terminating in the inner chamber.

With regard to claim 16, neither Tilmanis nor Hansen discloses the claimed pair of temperature sensors placed in the vicinity of the evaporator such that for a given thickness of the ice layer only one of the temperature sensors is embedded in the ice layer. Claim 16 recites that a carrier is attached to the evaporator surface, where a first one of the temperature sensors is arranged directly on the carrier adjacent the surface of the evaporator and the second one of the sensors is arranged on the carrier at a distance from the first one of the temperature sensors and the surface. The sections in Hansen referenced in the Office Action describe only that the sensor detects a temperature of the evaporator and not that the sensor is held directly on the evaporator surface. Neither Tilmanis nor Hansen discloses corresponding subject matter.

Claim 24 recites that neither of the temperature sensors is disposed in the inner chamber. Although the Examiner references claim 24 in paragraph 18, the Examiner does not reference the subject matter defined in claim 24. Tilmanis clearly provides the second thermistor 38 within the food storage chamber 12 and also endeavors to detect a temperature difference between the evaporator and the food storage chamber 12. As such, it is contrary to the teachings in Tilmanis to modify its structure as proposed in the Office Action. In addition, Hansen in fact is silent with regard to a positioning of the sensors except that the sensor holder 9 is secured to the vertical front face 25 of the evaporator 5. Both sensors are disposed in respective bores, and channels 35, 36 receive conductors that lead to the temperature sensors.

Applicants thus submit that the characterizations of the Hansen structure are inaccurate and that the rejection is thus misplaced.

Applicants further submit that the remaining dependent claims are allowable at least by virtue of their dependency on an allowable independent claim.

Claim 26 defines related subject matter, and Applicants submit that claim 26 is allowable for reasons similar to those discussed above.

CONCLUSION

In view of the above, entry of the present Amendment and allowance of Claims 10-26 are respectfully requested. If the Examiner has any questions regarding this Amendment, the Examiner is requested to contact the undersigned. If an extension of time for this paper is required, petition for extension is herewith made.

Respectfully submitted,

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